

REMARKS

Claim 13 has been amended to more clearly define the invention. Support is found throughout the application, but more specifically on page 11, lines 1-3.

The drawings were objected to for failing to show features of the invention as specified in claims 27, 29 and 36. The objection is obviated by cancellation of claims 27, 29 and 36.

Claim 26 was objected to regarding a misspelling. The typographical error has been corrected.

Claims 26, 30-33 and 35-38 are rejected under 35 USC §112, second paragraph. This rejection has been obviated by cancellation of claims 30-33 and 37-38 and amendments to claims 26 and 35. Claim 36 has been cancelled as discussed above. Claim 26 has been amended to show proper antecedent basis. Claim 35 has been amended to more clearly define the invention. No new matter has been added.

Claims 13, 15-17, 19-21, 23 and 36 are rejected under 35 USC 102(b) as being anticipated by Heeger et al. (U.S. Patent 5,504,323). This rejection is respectfully traversed.

The switchable organic photodiode detectors of the present invention take advantage of the strong voltage dependence of the photosensitivity of photoactive organic materials used to make detectors. The electrode materials dictate the switching capability. "High photosensitivity can be switched on (typically in the range of 30-300 mA/W) at a selected reverse biasing voltage. The photosensitivity can be switched off effectively when the diode is biased externally at a voltage close to that corresponding to the internal potential" (see page 25-26, lines 29-2). Therefore, the ON state reverse bias voltage is selected to achieve the desired photosensitivity. In contrast, the OFF state forward bias voltage is dependent on the electrode materials selected.


Heeger discloses a strong voltage dependence of the photosensitivity of photoactive organic materials; he does not disclose or suggest how to take advantage of this behavior. For instance, to design a switchable organic photodiode detector with an on/off switching ratio that provides a prescribed photosensitivity. Heeger describes a photodiode device operating under reverse bias. "At $V_0 \sim -2.5V$ reverse bias, the current begins to increase exponentially. This "turn-on" voltage in reverse bias scales with the thickness of the polymer layer." (Column 11, line 58 to column 12, line 10). Heeger only recognizes the "turn-on" voltage that is dependent on the electronic properties of the polymer layer used in the device. He doesn't disclose or suggest the use of a selectively applied operating biasing voltage, that takes full advantage of the strong voltage dependence of the photosensitivity of the photoactive organic material used in the device to attain a prescribed photosensitivity for the photodiode detector. Therefore, the "turn-on" voltage in Heeger is achieved quite differently as opposed to the selected "ON state" voltage of the present invention.

Therefore, Applicants' claimed invention is not identically described nor is the disclosure capable of enabling one of ordinary skill in the art to practice Applicants' claimed invention. Therefore, Applicants respectfully request the Examiner to withdraw this rejection.

Claim 18 is rejected under 35 USC 103(a) over Heeger et al. in view of Sariciftci et al. (U.S. 5,331,183). Claim 22 is rejected under 35 USC 103(a) over Heeger et al. in view of Pei et al. (U.S. Patent 5,682,043). Claims 24 and 25 are rejected under 35 USC 103(a) over Heeger et al. in view of Byker et al. (U.S. Patent 5,805,330). Claim 26 is rejected under 35 USC 103(a) over Heeger et al. in view of Hawkins et al. (U.S. Patent 5,889,277). Claims 27-29 are rejected under 35 USC 103(a) over Heeger et al. in view of Kuhlmann et al. (U.S. Patent 5,929,499). Claims 34 and 35 are rejected under 35 USC 103(a) over Heeger et al. in view of Xu et al. (U.S. Patent 5,949,187) The above obviousness rejections are respectfully traversed by relying on the arguments given for the rejection under 35 USC 102(b) hereinabove. In addition, there is no teaching or motivation found in Heeger in combination with any of the secondary references to provide a switchable organic photodiode detector as found in the present invention. Therefore, the Examiner is requested to withdraw the obviousness rejections.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,


LOIS A. SANTOPIETRO
AGENT FOR APPLICANTS
Registration No.: 36,264
Telephone: (302) 892-7752
Facsimile: (302) 892-7949

Dated: June 2, 2003